What is claimed is:

1. A method of assembling first and second components, comprising:

measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component, the first plurality of discrete point positions being at least one of on and adjacent to the first component;

measuring a second surface position on the second component;

comparing the measurements associated with at least one of the first and second components with a desired position information;

computing a transformation matrix for improving the comparison between the measurements and the desired position information; and

moving at least one of the first and second components according to the transformation matrix.

2. The method of Claim 1, wherein measuring the measurements associated with the first component and measuring the measurements associated with the second component includes simultaneously measuring the measurements associated with the first and second components.

3. The method of Claim 1, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component includes measuring a first plurality of discrete point positions on the first component.

4. The method of Claim 1, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component includes measuring the first plurality of discrete point positions adjacent to the first component.

5. The method of Claim 1, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component,

and measuring at least one of a second surface position and a second plurality of discrete point positions associated with the second component includes measuring surface positions on both the first and second components.

6. The method of Claim 1, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component includes measuring the first plurality of discrete point positions using at least one of a global positioning system, an infrared global positioning system, and a laser-based point tracking system.

7. The method of Claim 1, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component includes measuring the first surface position using at least one of a radar system, structured light measurement system, and a scanning system.

8. The method of Claim 1, wherein comparing the measured positions of the at least one surface and the plurality of discrete points with a desired position information of the at least one of the first and second components includes comparing the measured positions with a computer-aided design model.

9. The method of Claim 1, wherein comparing the measured positions of the at least one surface and the plurality of discrete points with a desired position information includes applying a fitting routine to the measured positions and the desired position information.

10. The method of Claim 9, wherein the fitting routine includes at least one of a weighted fitting criteria, an unweighted fitting criteria, a Gaussian fitting criteria, and a Chebyshev fitting criteria.

11. The method of Claim 1, wherein comparing the measured positions of the at least one surface and the plurality of discrete points with a desired position information includes evaluating whether the measured positions are acceptably close to the desired position information.

12. The method of Claim 11, wherein evaluating whether the measured positions are acceptably close includes evaluating whether the measured positions are within at least one of an acceptable tolerance and an acceptable alignment.

13. The method of Claim 1, wherein computing a transformation matrix for improving the comparison between the measured positions and the desired position information includes computing at least one secondary transformation matrix for moving at least one of the first and second components into a corresponding final position.

14. The method of Claim 1, wherein computing a transformation matrix for improving the comparison between the measured positions and the desired position information includes computing a first transformation matrix for moving at least one of the first and second components into a first intermediate position, and computing a second transformation matrix for moving the at least one of the first and second components into a corresponding final position.

15. The method of Claim 1, wherein moving at least one of the first and second components according to the transformation matrix includes re-measuring the plurality of discrete point positions on said moved first and second components.

16. The method of Claim 1, wherein moving at least one of the first and second components according to the transformation matrix includes transmitting the transformation matrix to an at least partially automated position control system, the position control system

being adapted to move the at least one of the first and second components in accordance with the transformation matrix.

17. The method of Claim 16, wherein moving at least one of the first and second components according to the transformation matrix includes re-measuring the plurality of discrete point positions on the at least one of the first and second components, and providing the re-measured positions of the plurality of discrete points in a feedback loop to the position control system.

18. A method of assembling first and second components of an aircraft, comprising:

positioning the first component in a desired position;

positioning the second component proximate the first component;

measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component, the first plurality of discrete point positions being at least one of on and adjacent to the first component;

measuring a second surface position on the second component;

comparing the measurements associated with at least one of the first and second components with a desired position information;

computing a transformation matrix for improving the comparison between the first and second components and the desired position information of the second component; and

moving the second component relative to the first component in accordance with the transformation matrix.

19. The method of Claim 18, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component includes measuring discrete point positions on the first component.

20. The method of Claim 18, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component includes measuring the first surface position on the first component.

21. The method of Claim 18, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component, and measuring a second surface position on the second component includes simultaneously measuring surface positions on both the first and second components.

22. The method of Claim 18, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component includes measuring the first plurality of discrete point positions using at least one of a global positioning system, an infrared global positioning system, and a laser-based point tracking system.

23. The method of Claim 19, wherein measuring at least one of a first surface position and a first plurality of discrete point positions associated with the first component includes measuring the first surface position using at least one of a radar system, structured light measurement system, and a scanning system.

24. The method of Claim 18, wherein comparing the measurements associated with at least one of the first and second components with a desired position information includes comparing the measured positions with a computer-aided design model.

25. The method of Claim 18, wherein comparing the measurements associated with at least one of the first and second components with a desired position information includes applying a fitting routine to the measured positions and the desired position information.

26. The method of Claim 18, wherein comparing the measurements associated with at least one of the first and second components with a desired position information includes comparing the measurements associated with the second component with a desired position information for the second surface.

27. The method of Claim 26, wherein comparing the measurements associated with the second component with a desired position information for the second surface includes applying a fitting routine to the measured positions and the desired position information.

28. The method of Claim 18, wherein moving the second component relative to the first component in accordance with the transformation matrix includes re-measuring the plurality of discrete point positions on the second component.

29. The method of Claim 18, wherein moving the second component relative to the first component in accordance with the transformation matrix includes transmitting the transformation matrix to an at least partially automated position control system, the position control system being adapted to move the second component relative to the first component in accordance with the transformation matrix.

30. The method of Claim 29, wherein moving the second component relative to the first component in accordance with the transformation matrix includes re-measuring the plurality of discrete point positions on the second component, and providing the re-measured positions of the plurality of discrete points in a feedback loop to the position control system.

31. A system for positioning first and second components for assembly, comprising:

a first measurement system adapted to measure a plurality of discrete point positions associated with at least one of the first and second components, the discrete point positions

being at least one of on and adjacent to the corresponding one of the first and second components;

a second measurement system adapted to measure at least one surface position on at least one of the first and second components;

a data management device operatively coupled to the first and second measurement systems, the data management device including a processing portion adapted to:

receive the measured positions of the plurality of discrete points and the at least one surface,

compare the measured positions with a desired position information of the at least one of the first and second components, and

compute a transformation matrix for improving the comparison between the measured positions and the desired position information; and

a position control system operatively coupled to the data management device and adapted to move at least one of the first and second components according to the transformation matrix.

32. The system of Claim 31, wherein the first and second measurement systems are further adapted to operate simultaneously to measure the plurality of discrete point positions and the at least one surface position, respectively.

33. The system of Claim 31, wherein the first measurement system includes at least one of a global positioning system, an infrared global positioning system, and a laser-based point tracking system.

34. The system of Claim 31, wherein the second measurement system includes at least one of a radar system, a structure light measurement system, and a scanning system.

35. The system of Claim 31, wherein the processing portion is further adapted to compare the measured positions of the at least one surface and the plurality of discrete points with a computer-aided design model.

36. The system of Claim 31, wherein the processing portion is further adapted to compare the measured positions of the at least one surface and the plurality of discrete points with a desired position information by applying a fitting routine to the measured positions and the desired position information.

37. The system of Claim 31, wherein the processing portion is further adapted to compare the measured positions of the at least one surface and the plurality of discrete points with a desired position information by evaluating whether the measured positions are acceptably close to the desired position information.

38. The system of Claim 31, wherein the processing portion is further adapted to compute a transformation matrix for improving the comparison between the measured positions and the desired position information by computing a transformation matrix for moving at least one of the first and second components into a corresponding final position.

39. The system of Claim 31, wherein the first measurement system adapted to measure a plurality of discrete point positions is further adapted to re-measure the plurality of discrete point positions during movement of the at least one of the first and second components by the position control system.

40. The system of Claim 31, wherein the position control system comprises an at least partially automated position control system, and wherein the first measurement system adapted to measure a plurality of discrete point positions is further adapted to re-measure the plurality of discrete point positions during movement of the at least one of the first and

second components by the position control system, and to provide the re-measured positions of the plurality of discrete points in a feedback loop to the position control system.

41. A manufacturing facility for assembling first and second components of an aircraft, comprising:

a working space adapted to receive the first and second components;

a first measurement system adapted to measure a plurality of discrete point positions associated with at least one of the first and second components, the discrete point positions being at least one of on and adjacent to the corresponding one of the first and second components;

a second measurement system adapted to measure at least one surface position on at least one of the first and second components;

a data management device operatively coupled to the first and second measurement systems, the data management device including a processing portion adapted to:

receive the measured positions of the plurality of discrete points and the at least one surface,

compare the measured positions with a desired position information of the at least one of the first and second components, and

compute a transformation matrix for improving the comparison between the measured positions and the desired position information; and

a position control system at least partially disposed within the working space and operatively coupled to the data management device, the position control system being adapted to move at least one of the first and second components according to the transformation matrix.

42. The manufacturing facility of Claim 41, wherein the structure comprises at least one of a hangar and an assembly-line building.

43. The manufacturing facility of Claim 41, wherein the first measurement system is further adapted to be operated simultaneously with the second measurement system.

44. The manufacturing facility of Claim 41, wherein the first measurement system includes at least one of a global positioning system, an infrared global positioning system, and a laser-based point tracking system.

45. The manufacturing facility of Claim 41, wherein the second measurement system includes at least one of a radar system, a structured light measurement system, and a scanning system.

46. The manufacturing facility of Claim 41, wherein the processing portion is further adapted to compare the measured positions of the at least one surface and the plurality of discrete points with a computer-aided design model.

47. The manufacturing facility of Claim 41, wherein the processing portion is further adapted to compare the measured positions of the at least one surface and the plurality of discrete points with a desired position information by applying a fitting routine to the measured positions and the desired position information.

48. The manufacturing facility of Claim 41, wherein the processing portion is further adapted to compare the measured positions of the at least one surface and the plurality of discrete points with a desired position information by evaluating whether the measured positions are acceptably close to the desired position information.

49. The manufacturing facility of Claim 41, wherein the processing portion is further adapted to compute a transformation matrix for improving the comparison between the measured positions and the desired position information by computing a transformation

matrix for moving at least one of the first and second components into a corresponding final position.

50. The manufacturing facility of Claim 41, wherein the first position measurement position is further adapted to re-measure the plurality of discrete point positions during movement of the at least one of the first and second components by the position control system.

51. The manufacturing facility of Claim 41, wherein the position control system comprises an at least partially automated position control system, and wherein the first measurement system adapted to measure a plurality of discrete point positions is further adapted to re-measure the plurality of discrete point positions during movement of the at least one of the first and second components by the position control system, and to provide the re-measured positions of the plurality of discrete points in a feedback loop to the position control system.